

REMARKS

Reconsideration of the application is respectfully requested in view of the following responsive remarks. For the Examiner's convenience and reference, Applicant's remarks are presented in the order in which the corresponding issues were raised in the Office Action.

In the Office Action of November 30, 2006 the following actions were taken:

- (1) The Examiner requested affirmation of elected Group I;
- (2) Claims 1-2, 4-5, 8-11 and 13 were rejected under 35 U.S.C. § 102(e) as being allegedly anticipated by U.S. Pat. No. 7,078,237 (hereinafter "Mowry"); and
- (3) Claims 1-14 were rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over U.S. Pub. No. 2003/0199081 (hereinafter "Widing") in view of Mowry and/or U.S. Pub. No. 2002/0177135 (hereinafter "Doung").

It is respectfully requested that the presently pending claims be allowed based on the remarks below.

Election Requirement

The Applicant affirms the election of Group I made during the telephone conversation between Julia Church Dierker and the Examiner on November 8, 2006.

Rejections Under 35 U.S.C. § 102

The Examiner has rejected claims 1-2, 4-5, 8-11 and 13 as being anticipated by Mowry. Specifically, Mowry discloses a micropyrolyzer for use in a portable analyzer. See abstract. The micropyrolyzer is one discrete part of a chemical analyzer having a chemical preconcentrator, a chemical separator, and a chemical detector. See col. 6, lines 58-60; Figure 2. The micropyrolyzer is "constructed to rapidly pyrolyze a liquid or solid sample 150 for subsequent analysis of the decomposition, dissociation, or vaporization product." See col. 4, lines 42-45.

Independent claim 1 has been amended to specifically recite in the body of the claim that the biochip is disposable. Claim 8 also contains this element as it recites "a disposable biochip" in the body of the claim. As the Examiner is aware, a rejection under 35 U.S.C. 102(e) must contain each and every element of the claim.

The present claims recite a disposable biochip having an integrated heating device, and thus, the heating device (which is part of the biochip), is also disposable.

Conversely, the Mowry reference teaches the use of a micropyrolyzer as part of a chemical analyzer. The Mowry reference does not teach the use of a disposable biochip. Mowry contains absolutely no language that would suggest that the disclosed micropyrolyzer is disposable. In fact, the embodiments described in Mowry suggest that the micropyrolyzer is a permanent part of a chemical analyzer. Figure 4, in Mowry, shows the micropyrolyzer configured with a gas chromatograph mass spectrometer (GCMS), which is an expensive piece of equipment. Mowry also discloses a "series of tests" performed with the micropyrolyzer. See col. 8, lines 39-41. Such descriptions clearly illustrate a non-disposable use. As Mowry does not teach or disclose a disposable biochip, the Applicant submits that Mowry does not teach or disclose each and every element of the present claim set, and the Applicant respectfully requests that the Examiner withdraw the present rejection.

Rejections Under 35 U.S.C. § 103

The Examiner has rejected claims 1-14 under U.S.C. § 103(a) as being unpatentable over several references. The Applicant does not deem it necessary to recite the entire case law standard required in order to establish a *prima facie* case of obviousness. However, the Applicant would like to briefly remind the Examiner of some of the required criteria for establishing a *prima facie* case of obviousness; namely, that the asserted references as modified or combined must: 1) teach or suggest each and every element of the claimed invention; 2) provide sufficient motivation for the modification or combination asserted; and 3) provide a sufficient likelihood of successfully making the modification or combination.

With the above background in mind, the Applicant contends that a *prima facie* case of obviousness with respect to the pending claims has not been established. Specifically, the references do not provide sufficient teachings or motivation to be modified or combined in order to arrive at Applicant's invention as defined in the pending claims. Further, it is submitted that the combination of the references is based on hindsight. Therefore, without knowledge of the disclosure of the present invention, one of ordinary skill in the art would not be able to make the combinations proposed by the Examiner to arrive at the claimed invention.

Emphasis on the independent claims is provided herein, as the Applicant asserts that these claims are all patentably distinct over the prior art. Specifically, the Examiner has rejected claims 1-14 as being obvious over Wilding, in view or Mowry and/or Doung. Mowry was discussed above, and a brief discussion of the Wilding and Doung references is provided below.

Wilding

Wilding discloses disposable devices used in polymerase chain reactions (PCR). See [0039]-[0040]. The device can be heated and cooled in order to effectuate the rapid amplification of the polynucleotide. See [0039] and [0045]. Wilding does not teach the use of pyrolyzing the sample, as noted by the Examiner on page 6 of the current office action.

Doung

Doung discloses the use of devices for biochip analysis. See abstract. Specifically, Doung discloses cartridges that contain biochips. See [0030]. Doung notes that it may be desirable to destroy the biological material in the cartridge. See [0326]. Doung accomplishes this by providing a thermal controller that can heat the cartridge. See [0324].

Claims 1-14

The Examiner has rejected claims 1-14 as being unpatentable over Wilding in view of Mowry and/or Doung. The Examiner uses Wilding as a primary reference, assumedly since it discloses the use of disposable biochips for PCR. The Examiner then combines Wilding with Mowry and/or Doung since Wilding does not teach pyrolyzing the biological sample. However, such a combination is improper for several reasons.

First, Wilding *teaches away* from the use of heat that would cause pyrolyzation. Wilding relies on a heat and cooling cycle to amplify nucleotides in a PCR process. It is submitted that the addition of a pyrolyzing heat to such a system would **destroy** the functionality of Wilding. Wilding provides an effective means for controlling temperature within a fairly narrow range, 65°C to 94°C, allowing for a “rapid heating and cooling cycle.” See [0045]. Such methodology would be

significantly impaired if required to reach temperatures needed for pyrolysis. More specifically, Wilding uses heat to generate nucleotides for testing. The present claims describe the use of heat to pyrolyze the biological substance. As described in Applicant's specification as filed, pyrolysis refers to a heat induced chemical alteration and "can degrade the substance and render the substance altered enough for the biochip to be decontaminated or sanitized" (see page 6, line 29 through page 7, line 7). Thus, to combine Wilding (which teaches amplification) with a reference that teaches pyrolyzation is incongruent. As such, both of these combinations are improper, and the Applicant respectfully requests that the Examiner withdraw these rejections.

Second, there is no motivation to combine Wilding with Mowry and/or Doung. Wilding contains no language that would direct one skilled in the art to perform an additional pyrolyzing step using equipment that may or may not be inherently useful for that purpose. Again, Wilding does not teach or suggest the use of heat to a degree to cause pyrolysis. Doung does disclose the use of a thermal controller for controlled heating (e.g., for pyrolysis), however, as previously stated, such heating would destroy the stated purpose of Wilding (to heat for amplification). As such, it is submitted that one skilled in the art would not combine the Doung and Wilding references.

Furthermore, even though Doung does disclose the use of a thermal controller for controlled heating (including possible pyrolysis), the thermal controller is not part of the biochip. Rather, it is an outside source that heats a cartridge containing a plurality of biochips. See [0324] – [0326]. Therefore, Applicant submits that there is no motivation to combine a thermal controller configured for heating cartridges from Doung with an individual disposable biochip from Wilding.

Even if there was such motivation, it is submitted that the combination would fail to produce the instant invention since the Applicant's claim set contains a disposable biochip having an integrated heating device, and Wilding/Doung would provide an external heating device, i.e., the external thermal controller.

Additionally, the Applicant renews the previous argument with respect to Mowry, particularly as it is being combined with Wilding in this rejection. Mowry is directed to a micropyrolyzer configured with other components to provide a portable chemical analyzer. Mowry uses a micropyrolyzer to vaporize various samples to be

analyzed. In sharp contrast, Wilding is heating to amplify polynucleotides. It is submitted that the stated purpose of Wilding would be destroyed if combined with the teachings of Mowry. Therefore, the Applicant submits that this combination of these references is also improper, and the Applicant respectfully requests that the Examiner withdraw this rejection.

It is noteworthy that even though the Examiner alleges that Mowry and Doung disclose disposable biochips, the Applicant has shown that these references do not disclose such devices as they are defined in Applicant's pending claims. Furthermore, as the present references (Wilding and Mowry or Wilding and Doung) are drawn to incongruent methodologies, the Applicant contends that no person skilled in the art would be motivated to make such combinations, and that any combination of these references is based on impermissible hindsight.

CONCLUSION

In view of the foregoing, Applicant submits that claims 1-14 present allowable subject matter, and allowance is respectfully requested. If any impediment to the allowance of these claims remains after consideration of the above remarks, and such impediment could be removed during a telephone interview, the Examiner is invited to telephone Julia Church Dierker at (248) 649-9900, or the undersigned, so that such issues may be resolved as expeditiously as possible.

Please charge any additional fees except for Issue Fee or credit any overpayment to Deposit Account No. 08-2025.

Dated this 27th day of February, 2007.

Respectfully submitted,



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